

pulse ab is after reflection propagated by cd , cd , equally remote from each other with ab , ab , so that $ag + gc$, or $bh + hd$ are either of them equal to aa , as is also cc , but the body BAE being transparent, a part of the light of this Ray is refracted in the surface AB , and propagated by $gikb$ to the surface EF , whence it is reflected and refracted again by the surface AB . So that after two refractions and one reflection, there is propagated a kind of fainter Ray $emnf$, whose pulse is not only weaker by reason of the two refractions in the surface AB , but by reason of the time spent in passing and repassing between the two surfaces AB and EF , ef which is this fainter or weaker pulse comes behind the pulse cd ; so that hereby (the surfaces AB , and EF being so near together, that the eye cannot discriminate them from one) this confus'd or duplicated pulse, whose strongest part precedes, and whose weakest follows, does produce on the *Retina* (or the *optick nerve* that covers the bottom of the eye) the sensation of a *Yellow*.

And secondly, this *Yellow* will appear so much the deeper, by how much the further back towards the middle between cd and cd the spurious pulse ef is remov'd, as in 2 where the surface BC being further remov'd from EF , the weaker pulse ef will be nearer to the middle, and will make an impression on the eye of a *Red*.

But thirdly, if the two reflecting surfaces be yet further remov'd asunder (as in 3 CD and EF are) then will the weaker pulse be so far behind, that it will be more then half the distance between cd and cd . And in this case it will rather seem to precede the following stronger pulse, then to follow the preceding one, and consequently a *Blue* will be generated. And when the weaker pulse is just in the middle between two strong ones, then is a deep and lovely *Purple* generated; but when the weaker pulse ef is very near to cd , then is there generated a *Green*, which will be *bluer*, or *yellower*, according as the approximate weak pulse does precede or follow the stronger.

Now fourthly, if the thicker Plate chance to be cleft into two thinner Plates, as $CDFE$ is divided into two Plates by the surface GH then from the composition arising from the three reflections in the surfaces CD , GH , and EF , there will be generated several compounded or mixt colours, which will be very differing, according as the proportion between the thicknesses of those two divided Plates $CDHG$, and $GHFE$ are varied.

And fifthly, if these surfaces CD and FE are further remov'd asunder, the weaker pulse will yet lagg behind much further, and not only be coincident with the second, cd , but lagg behind that also, and that so much the more, by how much the thicker the Plate be; so that by degrees it will be coincident with the third cd backward also, and by degrees, as the Plate grows thicker with a fourth, and so onward to a fifth, sixth, seventh, or eighth; so that if there be a thin transparent body, that from the greatest thinness requisite to produce colours, does, in the manner of a Wedge, by degrees grow to the greatest thickness that a Plate can be of, to exhibit a colour by the reflection of Light from such a body, there shall

shall be generated several consecutions of colours thin end towards the thick, shall be *Yellow*, *Red*, *Purple*, *Blue*, *Green*; *Yellow*, *Red*, *Purple*, *Blue*, *Green*; so often repeated, as the weaker pulse does lose or first pulse, and is coincident with a second, third pulse behind the first. And this, as it is coincident with the first *Hypothesis* I took of colours, so upon experiment it agrees with the titles of instances that seem to prove it. One thing of greatest concern in this *Hypothesis*, is to determine the thickness requisite for these effects, which, though I have been attempting, yet so exceeding thin are these colours, that I have not been hitherto able to find out, if my endeavours shall answer my expectations, I shall be obliged to the curious Reader with some things more removed hitherto.

Thus have I, with as much brevity as I was able, endeavoured to cate (*Hypothetically* at least) the causes of the *Phænomena* cited, on the consideration of which I have been endeavouring.

First, because I think these I have newly given, concerning all the *Phænomena* of colours, not only of the *Prisme*, Water-drop, or Rainbow, and in laminated bodies of all that are in the world, whether they be fluid or solid, whether in thick or thin, whether transparent, or see through, shall in the next Observation further endeavour to be explained, because this being one of the two ornaments of a body, by the sight, whether looked on with, or without a glass, to deserve (somewhere in this Tract, which contains the Figure and Colour of some minute bodies) to be so minutely enquir'd into.

Observ. X. Of Metalline, and other

HAVING in the former Discourse, from the Fundamentals of Light, made it probable, that there are but two causes of the *Phantasm* of Colour is caus'd by the sensation of an uneven pulse of Light which is capable of no more than two degrees, that arise from the two sides of the oblique pulse, that be capable of infinite gradations or degrees (each from *White*, and ending the one in the deepest *Scarlet*, and the other in the deepest *Blue*) I shall in this section set down the manner of the generation of these colours, such as *Metallic* or colour'd bodies and several kinds of tinctures, which, together with those I treated of in the former, I suppose, comprise the several subjects in which colour is inherent, and the several manners by which it is